

## CLAIMS

[1] A Fresnel lens sheet in which lens patterns having a Fresnel surface becoming a light beam transmission surface and a rise surface becoming a light beam  
5 non-transmission surface are concentrically formed, wherein an optical axis of a Fresnel lens being the center of the lens patterns is disposed outside the Fresnel lens sheet, an angle of inclination of the Fresnel surface to the plane perpendicularly crossing the optical axis gradually increases from the optical axis toward the periphery, and the Fresnel lens sheet comprises an area where the angle of inclination of the Fresnel surface  
10 is  $77^{\circ}$  or more.

[2] The Fresnel lens sheet according to claim 1, wherein  
a low refractive index layer is provided on an incident surface side and/or an emission surface side of the Fresnel lens.

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[3] The Fresnel lens sheet according to claim 1, wherein  
a static charge preventive layer is provided on at least an incident surface of the Fresnel lens.

20 [4] The Fresnel lens sheet according to claim 1, wherein  
the Fresnel lens sheet is composed by laminating materials having different hardness and brittleness into two or more layers.

[5] A translucent type screen comprising a Fresnel lens sheet and an optical  
25 diffusion plate, wherein:

lens patterns having a Fresnel surface becoming a light beam transmission surface and a rise surface becoming a light beam non-transmission surface are concentrically formed on the Fresnel lens sheet;

an optical axis of the Fresnel lens being the center of the lens patterns is disposed  
5 outside the Fresnel lens sheet;

an angle of inclination of the Fresnel surface to the plane perpendicularly crossing the optical axis gradually increases from the optical axis toward the periphery;  
and

the Fresnel lens sheet comprises an area in which the angle of inclination of the  
10 Fresnel surface is  $77^\circ$  or more.

[6] The translucent type screen according to claim 5, wherein

the optical diffusion plate is any one of ground glass, a diffusion plate containing a filler or optical diffusion particles and the like, a lenticular sheet in which a plurality of  
15 convex cylindrical lenses are arrayed in one predetermined fixed direction, a cross-lenticular sheet in which a plurality of convex cylindrical lenses are disposed on the same surface so as to intersect in two predetermined directions, a lens sheet having a prism array, and a lens sheet having a micro lens structure in which unit lenses are two-dimensionally arrayed.

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[7] The translucent type screen according to claim 5, wherein

a low refractive index layer is provided on the incident surface side and/or the emission surface side of the Fresnel lens.

25 [8] The translucent type screen according to claim 5, wherein

a static charge preventive layer is provided on at least the incident surface side of the Fresnel lens sheet.

[9] The translucent type screen according to claim 5, wherein

5 the Fresnel lens sheet is composed of laminating materials having different hardness and brittleness into two or more layers.

[10] A rear projection type display apparatus comprising:

a translucent type screen having a Fresnel lens sheet and an optical diffusion  
10 plate;  
a projector capable of projecting picture images onto the translucent type screen;  
and

a reflection mirror provided between the projector and the translucent type screen; wherein

15 lens patterns having a Fresnel surface becoming a light beam transmission surface and a rise surface becoming a light beam non-transmission surface are concentrically formed on the Fresnel lens sheet, an optical axis of the Fresnel lens being the center of the lens patterns is disposed outside the Fresnel lens sheet, and

the reflection mirror is roughly installed at an intermediate position between the  
20 projector and the translucent type screen.

[11] The rear projection type display apparatus according to Claim 10, wherein

an installation angle of the reflection mirror to the translucent type screen is 5° or more.

[12] The rear projection type display apparatus according to Claim 10, wherein the projector is disposed so that picture images are diagonally projected onto the translucent type screen.

5 [13] The rear projection type display apparatus according to claim 10, wherein the optical diffusion plate is any one of ground glass, a diffusion plate containing a filler or optical diffusion particles and the like, a lenticular sheet in which a plurality of convex cylindrical lenses are arrayed in a predetermined fixed direction, a cross-lenticular sheet in which a plurality of convex cylindrical lenses are disposed on the  
10 same surface so as to intersect in two predetermined directions, a lens sheet having a prism array, and a lens sheet having a micro lens structure in which unit lenses are two-dimensionally arrayed.

[14] The rear projection type display apparatus according to claim 10, wherein  
15 the reflection surface of the reflection mirror is an aspherical surface and/or an asymmetrically curved surface.

[15] The rear projection type display apparatus according to claim 10, wherein a low refractive index layer is provided on an incident surface side and/or an  
20 emission surface side of the Fresnel lens.

[16] The rear projection type display apparatus according to claim 10, wherein a static charge preventive layer is provided on at least an incident surface side of the Fresnel lens sheet.

- [17] The rear projection type display apparatus according to claim 10, wherein the Fresnel lens sheet is composed by laminating materials having different hardness and brittleness into two or more layers.